

Claims

What is claimed is:

1. An integrated circuit device comprising:
a heat spreader comprising a top surface and a bottom surface;
5 at least one integrated circuit die attached to the top surface of the heat spreader; and
a flexible leadframe attached to the top surface of a heat spreader and comprising one or more
flexible layers including at least one flexible insulating layer, and a plurality of electrically
conductive traces defined on the at least one flexible insulating layer, wherein the one or more
flexible layers are configured for use as a flexible leadframe in an integrated circuit device.
- 10 2. The integrated circuit device of claim 1, wherein two or more flexible layers are stacked
together.
3. The integrated circuit device of claim 1, wherein the flexible leadframe and the top surface
of the heat spreader define an interior area configured for receiving the at least one integrated circuit
die, and wherein the integrated circuit die is electrically connected to the flexible leadframe.
- 15 4. The integrated circuit device of claim 1, further comprising a lid attached to the flexible
leadframe, wherein the lid encloses an interior area configured for receiving the at least one
integrated circuit die.
5. The integrated circuit device of claim 4, wherein the lid comprises at least one of metal,
plastic, polyimide, plastic with metal coating, and ceramic.
- 20 6. The integrated circuit device of claim 1, wherein the flexible leadframe comprises at least
one embedded circuit component.

7. The integrated circuit device of claim 6, wherein the at least one embedded circuit component comprises one or more signal filters.

8. The integrated circuit device of claim 6, wherein the at least one embedded circuit component comprises one or more tuning capacitors

5 9. The integrated circuit device of claim 6, wherein the at least one embedded circuit component comprises one or more inductors.

10 10. A flexible leadframe comprising:
one or more flexible layers comprising at least one flexible insulating layer; and
a plurality of electrically conductive traces defined on the at least one flexible insulating
layer;
wherein the one or more flexible layers are configured for use as a flexible leadframe in an
integrated circuit device.

11. The flexible leadframe of claim 10, wherein two or more flexible layers are laminated together.

15 12. The flexible leadframe of claim 10, wherein the one or more flexible layers comprise at least one polyimide layer.

13. A method of producing a flexible leadframe comprising the steps of:
defining a plurality of electrically conductive traces on at least one flexible insulating layer
of one or more flexible layers; and
20 configuring the one or more flexible layers for use a flexible leadframe in an integrated circuit device.

14. The method of claim 13 further comprising the step of stacking two or more flexible layers together.

15. A method of producing an integrated circuit device with a flexible leadframe comprising the steps of:

- 5 attaching at least one integrated circuit die to a top surface of a heat spreader;
 attaching a flexible leadframe to the top surface of the heat spreader, wherein the flexible leadframe comprises one or more flexible layers comprising at least one flexible insulating layer, and a plurality of electrically conductive traces defined on at least one flexible insulating layer, wherein the one or more flexible layers are configured for use as a flexible leadframe in an integrated circuit
10 device; and
 electrically connecting the integrated circuit die to the flexible leadframe.

16. The method of claim 15, wherein two or more flexible layers are stacked together.

17. The method of claim 15, wherein the flexible leadframe comprises an interior area configured for receiving the at least one integrated circuit die.

18. The method of claim 17, further comprising the step of filling the interior area with a dielectric material.

19. The method of claim 17, further comprising the step of attaching a lid to the flexible leadframe, thereby enclosing the interior area.

20. The method of claim 15, wherein the step of attaching the leadframe occurs before the step of attaching the integrated circuit die to the top surface of the heat spreader.

21. The method of claim 15, wherein the step of attaching the integrated circuit die occurs before the step of attaching the leadframe to the top surface of the head spreader.

22. The method of claim 15, wherein the step of electrically connecting the integrated circuit die to the flexible leadframe comprises wire bonding the integrated circuit die to the flexible
5 leadframe.